User Manual for VE GSM Modem

INTRODUCTION

GSM/GPRS Smart Modem is a multi-functional, ready to use, rugged unit that can be embedded or plugged into any application. The Smart Modem can be controlled and customized to various levels by using the standard AT commands. The modem is fully type-approved, it can speed up the operational time with full range of Voice, Data, Fax and Short Messages (Point to Point and Cell Broadcast), and the modem also supports GPRS (Class 10) for spontaneous data transfer.

*The Smart Modem supports previous VEsions of Class 2 and the latest VEsions of Class 10.
The TCP/IP suite & PPP protocol is built in.

Physical Characteristics

Dimensions	93 x 81 x 26 mm (excluding connectors)
Weight	125 grams
Housing	Metallic Enclosure

Functions – GSM Modes

Standard	Quad Band Extended GSM 850 / 900 MHz Class 4 (2W) and GSM 1800 / 1900 Class(1W)
Interface	Serial interface RS232/ RS485 V. 24/V.28 Auto bauding function
	AT command set based on V.25ter and GSN 07.05 & 07.07
SMS	Mobile Originated (MO) and Mobile Terminated (MT),
	Mode Text & PDU point to point. Cell broadcast. In accordance with GSM 07.05.
Data	Asynchronous 2400, 4800, 9600, 14400 upto 115000 bits/s
	Transparent and Non Transparent mode
Audio	Half Rate/Full Rate/ Enhanced Full Rate.

Installing the Modem

To install the modem, plug the device on the provided SMPS Adapter.

Inserting/ Removing the SIM Card
To insert or Remove the SIM Card, it is necessary to press the SIM holder ejector button with Sharp edged object like a pen or a needle. When this is done the SIM holder comes out a little, then pull it out and insert or remove the SIM Card. Place the SIM Card Properly as per the direction of the installation. It is VEy important that the SIM is placed in the right direction for its proper working condition.

Connecting External Antenna
Connect GSM/GPRS Smart Modem to the external SMA antenna male end. The Frequency of the antenna should be set to GSM850/900/1800/1900. The right Antenna should be used with the specified frequency or else the Antenna can damage the modem or it can affect the communication.

Power Supply – Screw type connector with 9-30V DC, 2A supply.

Connection Modem to external devices:

RS232/RS485 can be used to connect to the external device through the D-SUB/screw type connector device that is provided in the modem

Connectors

Connector	Function
SMA	RF Antenna connector
9 pin D-SUB /3 pin screw type	RS232 link / RS485 link
Adaptor Socket	Power Supply Connector
SIM Card holder	SIM Card

LED Status Indicator

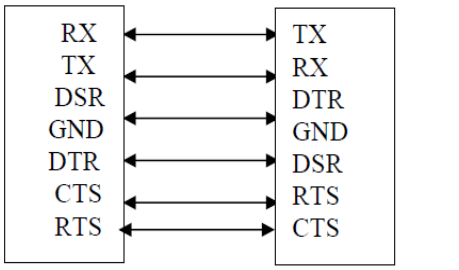
Single LED to indicate Data / Registration / GPRS connectivity and Power ON.

RS232 Cable details

9 – PIN D-SUB Female Connector

PIN	NAME	Designation	Type
1	NC	-	-
2	Tx	Transmit Data	Input
3	Rx	Receive Data	Output
4	DSR	Data Set Ready	Output
5	GND	Ground	Ground
6	DTR	Data Terminal Ready	Input
7	CTS	Clear to send	Output
8	RTS	Request to send	Input
9	NC	-	-

9- PIN Serial Male to Female Cable Details



9 Pin male side 9 Pin female side

RS485 Cable details

RS485 is 2 wire interface which has following signals.
3 pin screw type connector

PIN	NAME
1	D+
2	D-
3	GND

Some basic AT Commands (for Dialing, SMS Read/write, signal quality)

SMS send/receive: Following commands selects the procedure for message reception from the network and transmission to the network.

Command	Possible responses
AT+CNMI=2,1,0,0,0 *Note : <mt>=1*	OK
	AT+CMTI : "SM",1 *Note : message received*
AT+CNMI=2,2,0,0,0 *Note : <mt>=2*	OK
	+CMT : "123456","98/10/01,12 :30 00+00",129,4 ,32,240, "15379",129,5<CR><LF> message received *Note : message received*
AT+CNMI=2,0,0,1,0 *Note : <ds>=1*	OK
AT+CMGS="+33146290800"<CR> Message to send <ctrl-Z> *Note : Send a message in text mode*	+CMGS : 7 OK *Note : Successful transmission*
	+CDS : 2, 116, "+33146290800", 145, "98/10/01,12 :30 :07+04", "98/10/01 12 :30 :08+04", 0 *Note : message was correctly delivered*

Dialing / Attending the Incoming call: Following commands selects the procedure for Dialing or initiating the call and Attending the incoming call.

Commands	Possible Responses
ATDT 1234567890;	Ok, No carrier
	Note: for dialing any fixed line, mobile no, No carrier is possible when signal quality is low, absence of mobile signals.
ATA	Attending an incoming call.
ATH	Hung up the call

Modem connection with network: Following Commands indicates modem is entering into network.

Commands	Possible Responses
AT+CREG?	0,1-OK 0,2-Resnchronizing is attempt with network

Signal Quality +CSQ: This command is used to ascertain the received signal strength indication with or without a SIM card inserted.

Command	Possible responses
AT+CSQ	+CSQ: <rssi>,<ber> OK *Note : <rssi> and <ber> as defined below*

Note: All at commands are given at serial side with help of hyper terminal.

TROUBLESHOOTING:

Q. The modem does not answer through the serial link
A) Is the modem correctly powered on?
If not, the Check power Adapter, rating is INPUT – 230 VAC, OUTPUT- 9-30V DC, 2AMPS

B) Is the serial cable suitable and adjusted in the modem and PC sockets?
A suitable cable must follow pin assignment described in **PIN DETAILS**
Check in particular, that Rx and Tx are properly connected for 3 wire communication

C) Check that your communication program is properly configured:
Modem factory setting for the character framing are:
Data Bits: 8, Parity: None, Stop Bits: 1
The factory setting for the baud rate is 9600 bps.

D) Does any other program interfere with your communication program (conflict on communication port access)?
If yes, close any application likely to interfere (e.g. mouse or printer driVE).

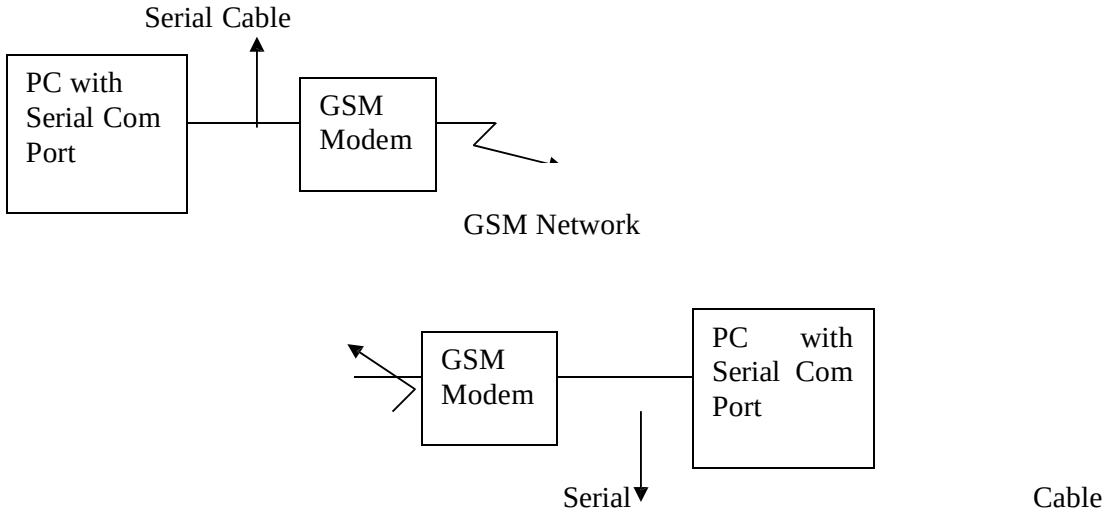
Q) The modem always returns «Error» when trying to issue a communication
A) Issue AT+CMEE=1 to have extended error code and retry

Error Code	Diagnostic	Hint
0	Phone Failure	Call your technical support
3	Operations not allowed	
4	Operation not supported	
10	SIM not inserted	Insert the SIM card in the SIM holder of the Modem If SIM card is inserted, insure that it is clean and properly inserted
11	SIM PIN required	Enter PIN Code
12	SIM PUK required	Enter PUK code (Call your network provider)
13	SIM Failure	Check validity of your SIM Card. If SIM damaged, call network provider
16	Incorrect password	Check the code you entered
17	SIM PIN2 required	Enter PIN2
18	SIM PUK2 Required	ENTER PUK2 (Call your Network Provider)
26	Dail String too long	Check your phone number (max 20 digits)
30	No Network Service	

For all other codes, and/or details, see AT commands manual.

Basic Test Procedure for Data Transfer between Two GSM Modems:-

1) **Setup Diagram –**



Procedure-

1) Open HyperTerminal utility on PC1 with following serial setting –
   - ¾ Baud rate – 9600
   - ¾ Data Bit – 8
   - ¾ Parity - None
   - ¾ Stop bit - 1
   - ¾ Flow control – None

   Above serial parameter can be change as per setup requirement.

2) Open Hyper terminal Utility on PC2 with setting given as above.
3) Connect both the modems to serial com ports.
4) Put the "**Data Mode" activated SIM** card in SIM card holder.
5) Power on the both modems, wait till the time 'LED' on the modem starts Blinking.
6) Use following at commands for active the Data call for data transfer from hyper terminal.
   - ¾ For Data call – ATD98XXXXXXXX – Modem will generate data call form PC1.
   - ¾ For Auto answering- ATS0=2 - Issue this command on PC2 so the modem will answer the call after two rings.
   - ¾ Passing some time delay (less than 1min.) "Connect 9600" message will appear on both hyper terminals it indicates data call has started.
7) Now type the data on hyper terminal of PC1; it should be appearing on another hyper terminal of PC2.
8) You can transfer file size between two hyper terminals using GSM modems.

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